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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,954	11/16/2001	Marc A. Blais	FS-00561	7885

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MILES & STOCKBRIDGE PC
1751 PINNACLE DRIVE
SUITE 500
MCLEAN, VA 22102-3833

EXAMINER	
SINGH, DALIP K	

ART UNIT	PAPER NUMBER
2628	

DATE MAILED: 09/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/987,954	BLAIS, MARC A.	
	Examiner	Art Unit	
	Dalip K. Singh	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,5,6,8,9,11-14,16-18,20 and 21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5,6,8,9,11-14,16-18,20 and 21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to applicant's amendment dated April 26, 2006 in response to PTO Office Action dated January 26, 2006. The amendments to claim(s) 1, 3, 5, 6, 8, 9, 11-14, 16-18, 20 and 21; cancellation of claim(s) 2, 4, 7, 10, 15 and 19 have been noted and entered in the record, and applicant's remarks have been carefully considered resulting in the action as set forth herein below.

2. Applicant's arguments with respect to claim 1, 3, 5, 6, 8, 9, 11-14, 16-18, 20 and 21 have been considered but they are not persuasive.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 3, 5, 6, 8, 9 and 11-13 are rejected under 35 U.S.C. 103(a) US 6,567,081 B1 to Li et al. in view of US 5,640,496 to Hardy et al.

a. Regarding claim 1, Li et al. **discloses** compressing image-based rendering data and portions of which are being decompressed to render various two-dimensional views of the 3D scene (col. 3; lines 30-56). Li et al. **discloses** a memory (RAM 225, Fig. 2); means for storing the compressed graphic image data in the memory (...compression engine 107 is configured to compress the image data...compression engine 107 reduces the quantity of image data to megabytes...depending on the available memory...such compression makes it feasible for a computing system...to store compressed COM data 109...col. 5, lines 39-50); means for selectively decompressing a portion of said

compressed graphic image data as stored in the memory based on a selected coverage section of the graphical image data (...decompression engine 111 receives...accesses compressed COM data 109. Decompression engine 111 operates in a selective manner in response to access information from rendering engine 113. The access information identifies portions of the compressed COM data in need of decompression and subsequent rendering...col. 5, lines 50-56;...as such, there is no need to decompress the entire mosaic data during the rendering stage. At any time, only a specified view of the concentric mosaic scene is rendered, which requires the accessing of only a portion of compressed COM data 109 depending on such parameters as the location of the viewpoint, viewing direction and the field of view...col. 5, lines 57-62); display means for displaying the graphic image of interest based exclusively on the portion of the compressed graphic image data as decompressed (...rendering engine 113 essentially builds a 2D image of the 3D scene for the desired or selected view and displays the view through a monitor...col. 6, lines 6-13). However, Li is silent about the memory comprising a linked list in the memory, said linked list including a plurality of nodes, wherein each node comprises a flag field for flagging the node as unused if the node does not include compressed graphic image data for the graphic image of interest. Hardy et al. **discloses** data structures comprising linked lists of pixel value nodes 60 and head of each linked list comprises a pixel header node 50 (col. 6, lines 29-67); and further if one or two pixel value nodes have been entered to the pixel's linked list, those nodes are removed from the free list 315 and the corresponding bit for the given pixel is set in the bitmap 314 indicating a display change for that pixel location. The bit setting for a given pixel is akin to flagging a node to indicate its non-availability or availability for graphic image data (col. 9, lines 60-67). Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify the device as taught by

Li et al. with the feature "flag field bit for noting node usage by setting a bit" as taught by Hardy et al. **because** it results in efficient memory management.

b. Regarding claim 3, Li et al. **is silent about** means for storing the compressed graphic image data in the memory further includes means for storing the compressed graphic image data in a node in the linked list. Hardy et al. **discloses** data structures comprising linked lists of pixel value nodes 60 and head of each linked list comprises a pixel header node 50 (col. 6, lines 29-67). Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify the device as taught by Li et al. with the feature "memory management using dynamic data structures utilizing linked lists" as taught by Hardy et al. **because** it results in efficient memory management.

c. Regarding claims 5 and 6, Li et al. **is silent about** means for flagging, as unused, nodes in the linked list that do not include image data for the graphic image of interest; means for determining if any nodes in the linked list are flagged as unused; means for replacing image data in a node flagged as unused; and means for adding to the linked list a node for storing the image data if no nodes in the linked list are flagged as unused. Hardy et al. **discloses** keeping a free list of available nodes 39 within each memory block 38 so that an empty node can be quickly found and added to the appropriate linked list of pixel value nodes (...As nodes are removed from a linked list, they are returned to the free list for reuse...The bitmap would specify which pixel value nodes are free and which are in use...col. 8, lines 14-27). Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify the device as taught by Li et al. with the feature "maintenance of a free list of available nodes within each memory block so that an empty node can be quickly found and added to the linked list" as taught by Hardy et al. **because** it provides for not having to rearrange the allocated

memory or consolidation of memory thus improving processing efficiency (col. 8, lines 14-21).

a. Regarding claim 8, it is similar in scope to claim 1 and is rejected under the same rationale.

b. Regarding claim 9, it is similar in scope to claim 1 above and is rejected under the same rationale.

c. Regarding claim 11, it is similar in scope to claim 4 above and is rejected under the same rationale.

d. Regarding claim 12, it is similar in scope to claim 5 above and is rejected under the same rationale.

e. Regarding claim 13, it is similar in scope to claim 6 above and is rejected under the same rationale.

5. Claim(s) 14, 16-18, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,567,081 B1 to Li et al. in view of US 5,640,496 to Hardy et al., and further in view of US 6,515,673 B1 to Hashimoto et al.

d. Regarding claims 14 and 20, Li et al. **discloses** compressing image-based rendering data and portions of which are being decompressed to render various two-dimensional views of the 3D scene (col. 3; lines 30-56). Li et al. **discloses** a memory (RAM 225, Fig. 2); means for storing the compressed graphic image data in the memory (...compression engine 107 is configured to compress the image data...compression engine 107 reduces the quantity of image data to megabytes...depending on the available memory...such compression makes it feasible for a computing system...to store compressed COM data 109...col. 5, lines 39-50); decompressing a portion of said compressed graphic image data as stored in the memory based on a selected coverage section of the graphical image data (...decompression engine 111 receives...accesses

compressed COM data 109. Decompression engine 111 operates in a selective manner in response to access information from rendering engine 113. The access information identifies portions of the compressed COM data in need of decompression and subsequent rendering...col. 5, lines 50-56;...as such, there is no need to decompress the entire mosaic data during the rendering stage. At any time, only a specified view of the concentric mosaic scene is rendered, which requires the accessing of only a portion of compressed COM data 109 depending on such parameters as the location of the viewpoint, viewing direction and the field of view...col. 5, lines 57-62); display means for displaying the graphic image of interest based exclusively on the portion of the compressed graphic image data as decompressed (...rendering engine 113 essentially builds a 2D image of the 3D scene for the desired or selected view and displays the view through a monitor...col. 6, lines 6-13). However, Li et al. **does not disclose** plurality of nodes of a linked list in a memory with each node comprising a flag field. Hardy **disclose** data structures comprising linked lists of pixel value nodes 60 and head of each linked list comprises a pixel header node 50 (col. 6, lines 29-67); and further if one or two pixel value nodes have been entered to the pixel's linked list, those nodes are removed from the free list 315 and the corresponding bit for the given pixel is set in the bitmap 314 indicating a display change for that pixel location. The bit setting for a given pixel is akin to flagging a node to indicate its non-availability or availability for graphic image data (col. 9, lines 60-67). Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify the device as taught by Li et al. with the feature "flag field bit for noting node usage by setting a bit" as taught by Hardy et al. **because** it results in efficient memory management. However, Li-Hardy combination **does not disclose** compressed data including overhead data that defines a geographical extent of the file, the overhead data includes latitude and longitude

vertices. *Hashimoto et al.* ***discloses*** *a compression unit used to compress the environment map; division of the environment map into a plurality of tiles and creation of a header for the compressed environment map. The header contains an offset value for each compressed tile which provides the starting location of a compressed tile within the compressed environment map (col. 5, lines 10-21). Further, Hashimoto et al. discloses compression unit 1410 compressing environment map 940 so that decompression unit 1420 can decompress specific parts of compressed environment map 1430, rather than requiring decompression of compressed environment map 1430 in its entirety (col. 13, lines 64-67; col. 14, lines 1-15). Hashimoto et al. discloses header formation unit 1530 that creates a header 1710 (Fig. 17) for a compressed image, header 1710 containing a tile descriptor which details size of compressed tile, shape of the tile and vertices of the tile in image (col. 14, lines 49-62). The specification of the present application in paragraph 36 details "In addition to containing data representing each pixel, CADRG files contain overhead data. The overhead data include a coverage section that defines the geographical extent of the tile using sets of latitude and longitude vertices. Thus, the approximate latitude and longitude represented by any pixel in the 1536.times.1536 array comprising the tile can be determined for purposes of defining an area of interest". Thus Hashimoto's header discloses similar limitations as per the instant claim. Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify the device as taught by Li et al. with the "header that contains overhead data detailing tile information" as taught by Hashimoto* ***because*** *this results in less processing time for decompression.*

e. Regarding claim 21, Li et al. **discloses** a memory (RAM 225, Fig. 2); means for storing the compressed graphic image data in the memory (...compression engine 107 is

configured to compress the image data...compression engine 107 reduces the quantity of image data to megabytes...depending on the available memory...such compression makes it feasible for a computing system...to store compressed COM data 109...col. 5, lines 39-50); decompressing a portion of said compressed graphic image data as stored in the memory based on a selected coverage section of the graphical image data (...decompression engine 111 receives...accesses compressed COM data 109. Decompression engine 111 operates in a selective manner in response to access information from rendering engine 113. The access information identifies portions of the compressed COM data in need of decompression and subsequent rendering...col. 5, lines 50-56;...as such, there is no need to decompress the entire mosaic data during the rendering stage. At any time, only a specified view of the concentric mosaic scene is rendered, which requires the accessing of only a portion of compressed COM data 109 depending on such parameters as the location of the viewpoint, viewing direction and the field of view...col. 5, lines 57-62); display means for displaying the graphic image of interest based exclusively on the portion of the compressed graphic image data as decompressed (...rendering engine 113 essentially builds a 2D image of the 3D scene for the desired or selected view and displays the view through a monitor...col. 6, lines 6-13). However, Li et al. **does not disclose** plurality of nodes of a linked list in a memory with each node comprising a flag field. Hardy **disclose** data structures comprising linked lists of pixel value nodes 60 and head of each linked list comprises a pixel header node 50 (col. 6, lines 29-67); and further if one or two pixel value nodes have been entered to the pixel's linked list, those nodes are removed from the free list 315 and the corresponding bit for the given pixel is set in the bitmap 314 indicating a display change for that pixel location. The bit setting for a given pixel is akin to flagging a node to indicate its non-availability or availability for graphic image data (col. 9, lines 60-67).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify the device as taught by Li et al. with the feature "flag field bit for noting node usage by setting a bit" as taught by Hardy et al. **because** it results in efficient memory management. However, Li-Hardy combination **does not disclose** selective decompression of a portion of said compressed graphic image data in a tile as stored in the memory based on a selected coverage section of the graphical image data. Hashimoto et al. **discloses** a compression unit used to compress the environment map; division of the environment map into a plurality of tiles and creation of a header for the compressed environment map. The header contains an offset value for each compressed tile which provides the starting location of a compressed tile within the compressed environment map (col. 5, lines 10-21). Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify the device as taught by Li-Hardy combination with the feature "selectively decompressing of a portion of said compressed graphic image in a tile based on a selected coverage section of the graphical image data" as taught by Hashimoto et al. **because** it results in less processing time for decompression.

a. Regarding claims 16-18, Li-Hashimoto combination **is silent about** means for flagging, as unused, nodes in the linked list that do not include image data for the graphic image of interest; means for determining if any nodes in the linked list are flagged as unused; means for replacing image data in a node flagged as unused; and means for adding to the linked list a node for storing the image data if no nodes in the linked list are flagged as unused. Hardy et al. **discloses** keeping a free list of available nodes 39 within each memory block 38 so that an empty node can be quickly found and added to the appropriate linked list of pixel value nodes (...As nodes are removed from a linked list, they are returned to the free list for reuse...The bitmap would specify which

pixel value nodes are free and which are in use...col. 8, lines 14-27). Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made to modify the device as taught by Li-Hashimoto combination with the feature "maintenance of a free list of available nodes within each memory block so that an empty node can be quickly found and added to the linked list" as taught by Hardy et al. **because** it provides for not having to rearrange the allocated memory or consolidation of memory thus improving processing efficiency (col. 8, lines 14-21).

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Dalip K. Singh** whose telephone number is **(571) 272-7792**. The examiner can normally be reached on Mon-Friday (10:30AM-6: 30PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Ulka Chauhan**, can be reached at **(571) 272-7782**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, please contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). Please note that the new Central Official FAX number for application specific communications with the USPTO is **571-273-8300** (effective July 15, 2005).

Dalip K. Singh
Examiner , Art Unit 2628

dks
September 14, 2006

ULKA CHAUHAN
SUPERVISORY PATENT EXAMINER